

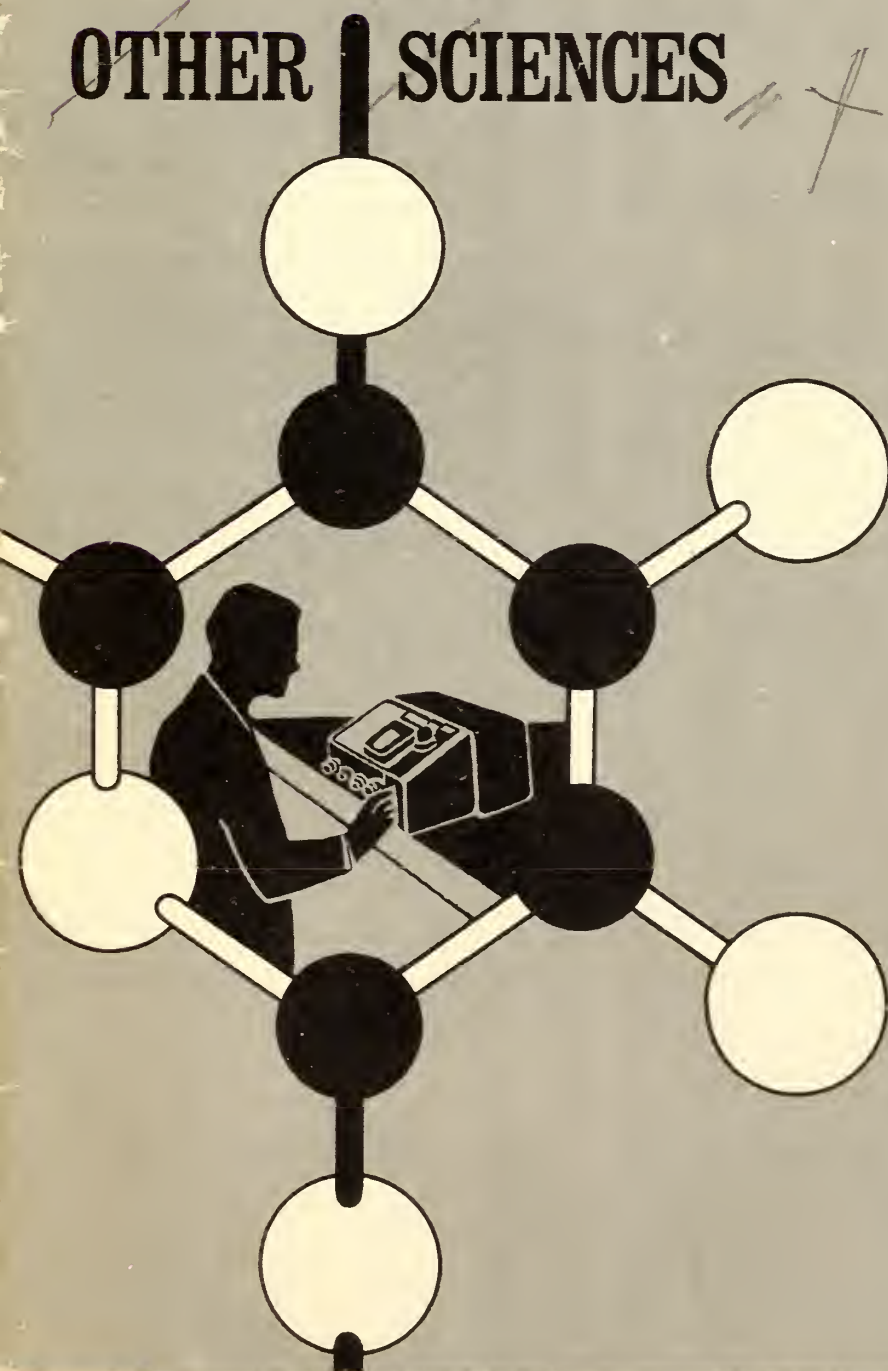
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# RESEARCH CAREERS IN CHEMISTRY AND OTHER SCIENCES



# Research Careers in Chemistry

■ Agricultural utilization research is a new technology to increase present uses and markets for farm products. Farmers need new markets for their output—this is particularly true for the United States. The Nation needs the new and better agricultural materials.

Utilization research on farm commodities is conducted by the Utilization Research and Development Administration, Agricultural Service.

Each Utilization Research and Development Administration laboratory is directed by nationally recognized scientists.

FOOD TECHNOLOGISTS are developing new foods and new or improved processes, and studying flavor, texture, and storage stability of foods.

PHARMACOLOGISTS are investigating the metabolic fate of chemical compounds and the mechanisms by which they affect man and animals.

MICROBIOLOGISTS are concerned with fermentations in the production of new and improved products from wheat and fundamental knowledge of the mechanisms that control sporulation and germination of spores.

ENGINEERS are studying basic phenomena, developing processes, and fabricating and testing fiber processing.

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# istry and Other Sciences

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polymerization, alkylation, esterification and other  
reactions of the protein in wool and mohair fibers;

Principal Fields of Research: Fruits, nuts, and  
vegetables; poultry products; forage crops; wheat and  
barley; wool and mohair; dry beans and peas.

Western Utilization Research and Development Division  
800 Buchanan Street  
Albany, Calif. 94710

TEXTILE TECHNOLOGISTS AND PHYSI-  
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structural arrangements of cellulose within the cotton  
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# Research Careers in Chemistry and Other Sciences

■ Agricultural utilization research is an organized effort through science and technology to increase present uses and to discover and develop new uses for farm products. Farmers need new markets and strengthened demand for their output—this is particularly true for commodities now in surplus—and the Nation needs the new and better products that science can create from agricultural materials.

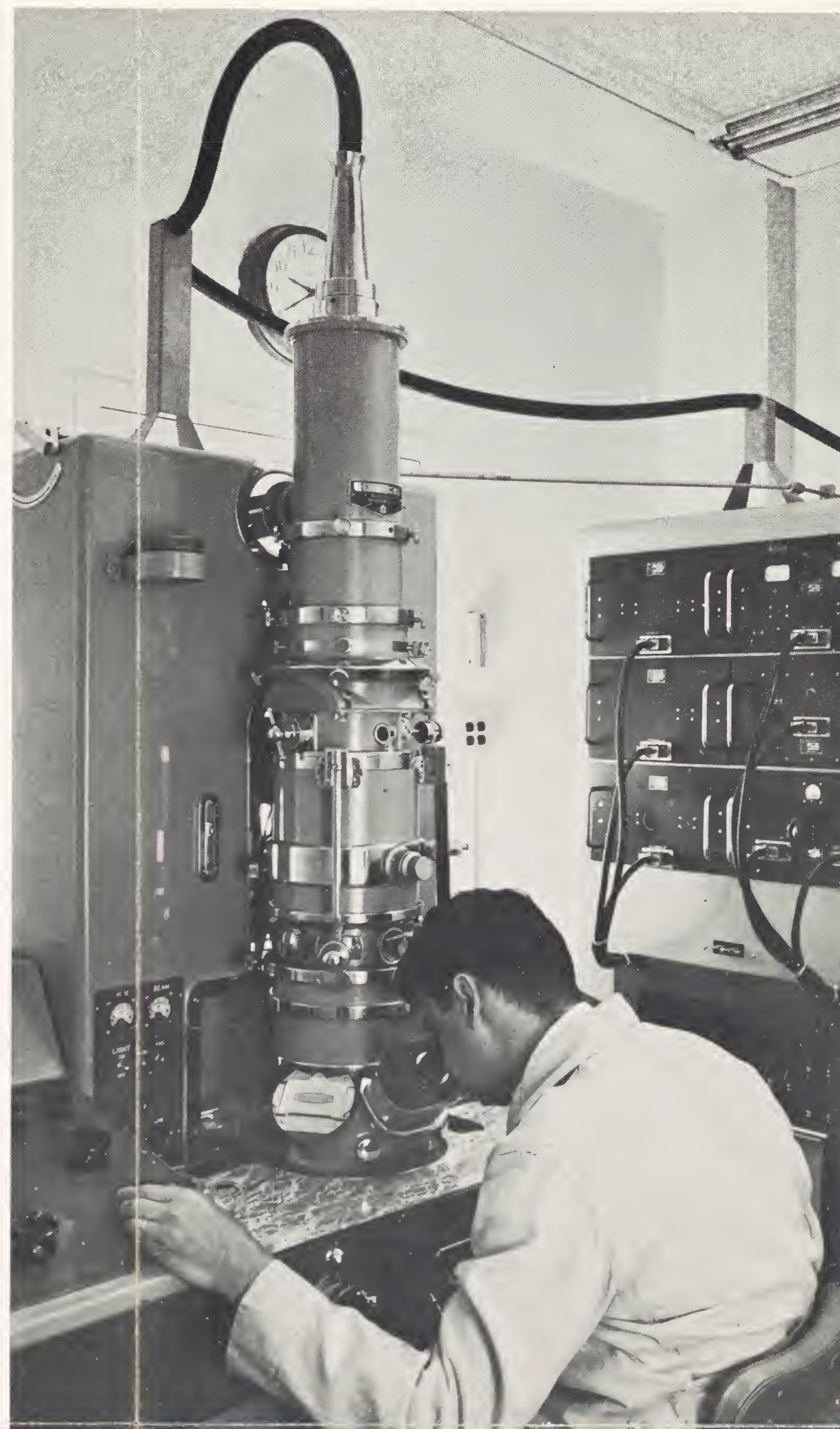
Utilization research on farm commodities is conducted by four regional Utilization Research and Development Divisions of the Agricultural Research Service.

Each Utilization Research and Development Division has several research laboratories directed by nationally recognized scientists. The challenging research programs emphasize fundamental and exploratory research as the basis for applied and developmental research on new products and processes from raw materials of agricultural origin.

These laboratories offer an opportunity to specialize and to build scientific status; to grow professionally through work and study; to advance on the basis of research accomplishments; to present papers before national and international scientific meetings; to attend stimulating seminars and advanced lecture courses given by outstanding scientists; and to enjoy the advantage of freedom to publish.

These regional research centers have the latest in scientific equipment and supporting facilities.

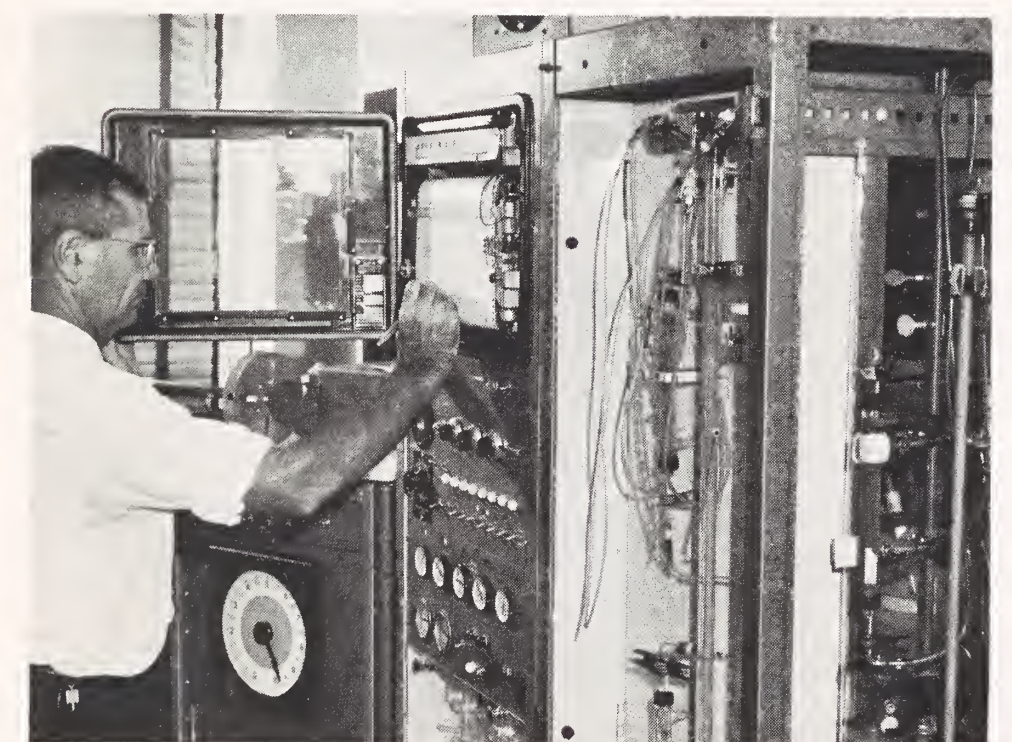
*Ultrastructures of plant and animal tissue are studied by electronmicroscopy. Scientist (far right) uses an automatic amino analyzer in a basic research project.*



## FIELDS OF SPECIALIZATION

Dynamic research programs offer a wide variety of careers in specialized scientific fields:

- Organic synthesis of new carbohydrate and lipid derivatives;
- Structure analyses of natural products;
- Rheological properties of solutions of polysaccharides and proteins;
- Molecular properties of starches, proteins, and other natural polymers;
- Synthesis of new polymers from carbohydrates, lipids, amino acids, or peptides;
- Rearrangement of glycerides and separation of specific fatty acids and glycerol esters;
- Chemical engineering and pilot-plant development of products and processes;
- Microbiological biosynthesis of varied products and investigation of their properties, structure, and applications.



*Each Utilization Research and Development Division has several research laboratories directed by nationally recognized scientists. These regional research*

*centers have the latest in scientific equipment and supporting facilities.*

## REGIONAL RESEARCH DIVISIONS

**Northern Utilization Research and Development Division**  
1815 North University Street  
Peoria, Ill. 61604

Principal Fields of Research: Cereal grains—corn, wheat, barley, grain sorghum, and oats; oilseed—soybeans, flaxseed, safflower, and erucic acid containing oilseeds; new crops.

ORGANIC CHEMISTS are conducting fundamental and exploratory studies on transformations of carbohydrates or oils to new products.

PHYSICAL CHEMISTS are investigating natural or synthetic high polymers and the molecular structure of starch, proteins, and oils.

BIOCHEMISTS are conducting research on the separation, characterization, and chemical reactions

of cereal and oilseed proteins; on their molecular composition, chemical structure, and enzymic activities; on polymeric compounds elaborated by microorganisms; and on the enzymes involved in fermentation.

MICROBIOLOGISTS are classifying and examining a wide variety of micro-organisms to discover or develop products of fermentation.

CHEMICAL ENGINEERS are conducting engineering and development research to convert laboratory processes into economic industrial processes.

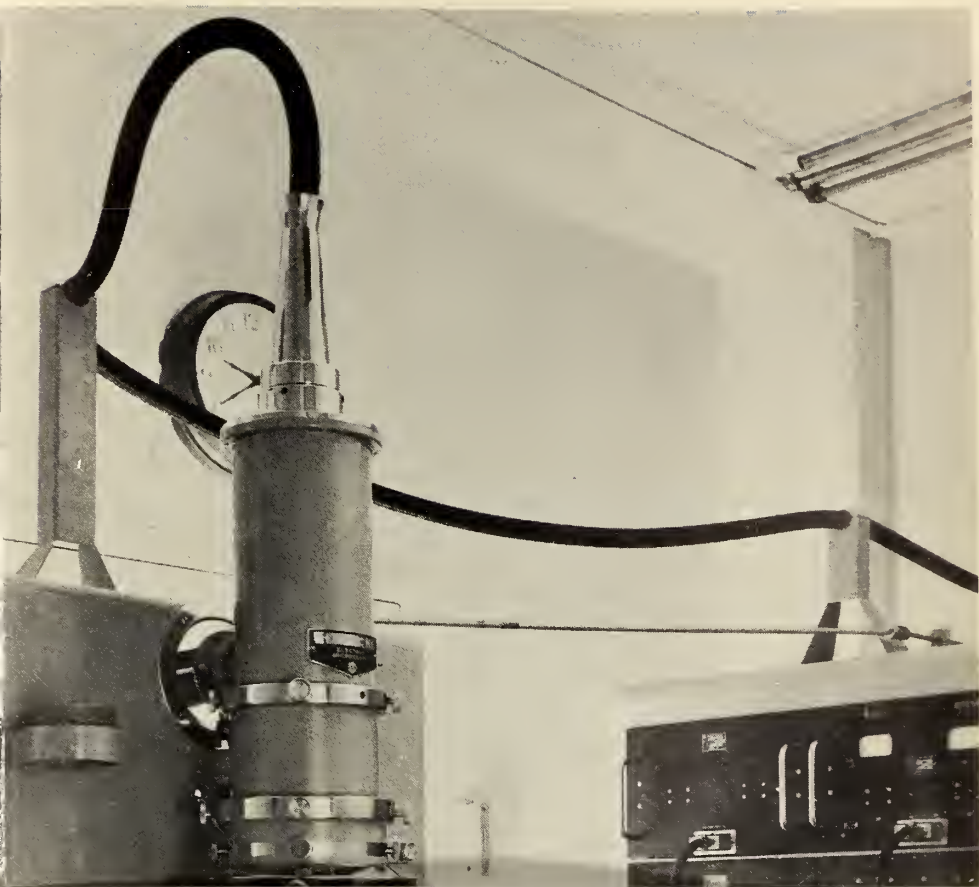


Southern Utilization Research and Development Division  
1100 Robert E. Lee Boulevard (Post Office Box 19687)  
New Orleans, La. 70119

Principal Fields of Research: Cotton and cotton-seed; pine gum; fruits and vegetables, including citrus, sweetpotatoes, and cucumbers; and peanuts.

CHEMISTS are conducting basic and applied research in the various fields of chemistry—synthesizing new chemicals, studying organic cross-linking compounds which react with cellulose to impart desirable properties to cotton, investigating carotenoid pigments and other components of fruits and vegetables, and carrying out other interesting research related to the above commodities.

CHEMICAL AND MECHANICAL ENGINEERS are developing and evaluating new processes on a pilot-plant scale and developing new and improved processing equipment.





## FIELDS OF SPECIALIZATION

Dynamic research programs offer a wide variety of careers in specialized scientific fields:

- Organic synthesis of new carbohydrate and lipid derivatives;
- Structure analyses of natural products;
- Rheological properties of solutions of polysaccharides and proteins;
- Molecular properties of starches, proteins, and other natural polymers;
- Synthesis of new polymers from carbohydrates, lipids, amino acids, or peptides;
- Rearrangement of glycerides and separation of specific fatty acids and glycerol esters;
- Chemical engineering and pilot-plant development of products and processes;
- Microbiological biosynthesis of varied products and

Principal Fields of Research: Animal products—dairy, meat, fats, and leather; plant products—fruits, vegetables, and tobacco; and allergen studies. CHEMISTS are interested in research in proteins and fats and are characterizing milk proteins, carrying out exploratory reactions with fatty acids, and studying the major and minor components of foods. CHEMICAL ENGINEERS are developing and evaluating new processes on a pilot-plant scale, doing cost and design studies, and investigating unit operations. MICROBIOLOGISTS are conducting basic research on spore germination, microbial fermentation, and other microbiological processes. FOOD TECHNOLOGISTS are studying dairy and meat products and other processed goods.





## ATTRACTIVE CAREER LADDER

Several entrance levels are available. Each level has a salary range that provides annual increases for the first 3 years and periodic increases thereafter. Career advancement is accomplished by grade promotions based on research potential and achievements.

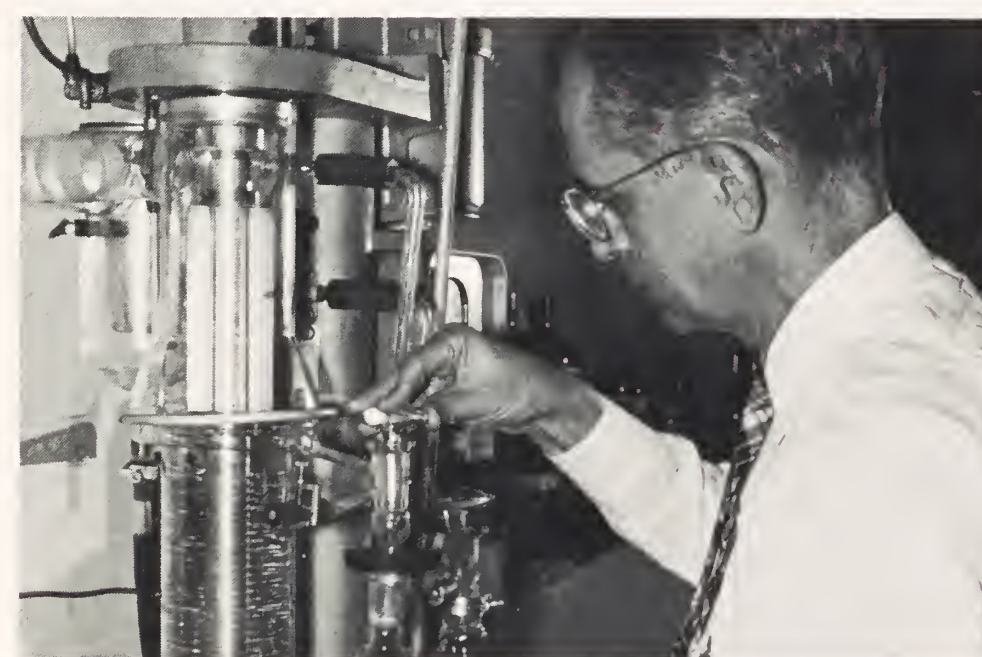
Grade levels	Entrance salaries	Requirements:
GS-5	\$5,000 (chemists, physicists, and engineers \$5,990)	Bachelor's degree in an appropriate major.
GS-7	\$6,050 (chemists, physicists, and engineers \$7,050)	Bachelor's degree plus 1 year of appropriate graduate work or 1 year of research experience. Persons with a bachelor's degree may qualify for GS-7 if they have shown superior academic qualifications by their overall college average, by their average in their college major, by high class standing, or by election to national academic honor societies.
GS-9	\$7,220 (chemists, physicists, and engineers \$7,710)	Master's degree in appropriate field within the past 2 years and demonstrated superior ability in graduate studies; or bachelor's degree plus 2 years of appropriate graduate work (60 semester hours), or 2 years of progressive research experience.
GS-11	\$8,650 (chemists, physicists, and engineers \$8,945)	Ph. D. degree; or 3 years of progressively responsible research experience beyond the bachelor's degree level.

GS-12 \$10,250

GS-13 \$12,075  
GS-14 \$14,170  
GS-15 \$16,460

Ph. D. degree within the last 2 years, and demonstrated superior ability in graduate studies; or 3 years of progressively responsible research experience beyond the bachelor's degree level.

Increasingly responsible professional experience is required at each higher grade level. These positions require experience showing ability to conduct the most difficult research, outstanding competence in a scientific field, and ability of a high order in planning, organizing, directing, and interpreting difficult research projects.



*A brush distillation column is used in the separation of fatty acids of vegetable oils.*

## PROFESSIONAL GROWTH AND RECOGNITION

Challenging research problems  
Stimulating research environment  
Individual specialization and recognition  
Papers presented at scientific meetings  
Collaboration with outstanding scientists  
Scientific seminars and lecture series  
Prompt publication with authorship

## CAREER BENEFITS

Training opportunities  
Promotions based on achievement  
Regular salary increases  
Incentive and honor awards  
Liberal vacation and sick leave benefits  
Low-cost life and health insurance  
Excellent retirement system  
Moving and travel expenses (for most positions)

## CREATIVE SCIENTISTS SOUGHT

B.S.	IN	Organic chemistry, physical chemistry and biochemistry
M.S.		Physics
Ph. D.		Chemical and mechanical engineering
		Food, fiber, and textile technology
Summer research assignments	FOR	Undergraduate trainee
		Graduate student
		Postdoctorate fellowship
		Chemistry professor or instructor

PLUS

Postdoctorate Resident Research Associateships

**Write or Visit the Utilization Research and Development Division Nearest You**

Washington, D.C.

Issued December 1964

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### Eastern Utilization Research and Development Division

600 East Mermaid Lane  
Philadelphia, Pa. 19118

Principal Fields of Research: Animal products—dairy, meat, fats, and leather; plant products—fruits and vegetables, tobacco, honey, maple, and new crops; allergen studies.

CHEMISTS are interested in research in proteins and fats and are characterizing milk proteins, carrying out exploratory reactions with fatty acids, and studying the major and minor components of foods.

CHEMICAL ENGINEERS are developing and evaluating new processes on a pilot-plant scale, doing cost and design studies, and investigating unit operations.

MICROBIOLOGISTS are conducting basic research on spore germination, microbial fermentation, and other microbiological processes.

FOOD TECHNOLOGISTS are studying dairy and meat products and other processed goods.

### Southern Utilization Research and Development Division

1100 Robert E. Lee Boulevard (Post Office Box 19687)  
New Orleans, La. 70119

Principal Fields of Research: Cotton and cottonseed; tung fruit; pine gum; fruits and vegetables, including citrus, sweetpotatoes, and cucumbers; sugarcane; rice; peanuts; and new crops.

CHEMISTS are conducting basic and applied research in the various fields of chemistry—synthesizing new chemicals, studying organic cross-linking compounds which react with cellulose to impart desirable properties to cotton, investigating carotenoid pigments and other components of fruits and vegetables, and carrying out other interesting research related to the above commodities.

CHEMICAL AND MECHANICAL ENGINEERS are developing and evaluating new processes on a pilot-plant scale and developing new and improved processing equipment.

TEXTILE TECHNOLOGISTS AND PHYSICISTS are studying the relations between cotton fiber and yarn and fabric physical properties, and the structural arrangements of cellulose within the cotton fiber.

### Western Utilization Research and Development Division

800 Buchanan Street  
Albany, Calif. 94710

Principal Fields of Research: Fruits, nuts, vegetables, and rice; poultry products; forage crops; wheat and barley; wool and mohair; sugarbeets; dry beans and peas; castor beans; new crops.

ORGANIC CHEMISTS are investigating the components of foods that contribute to flavor and aroma; the loss of color in processed foods; the polymerization, alkylation, esterification and other reactions of the protein in wool and mohair fibers;

and the derivatives of fatty acid constituents of oil seeds.

CHEMICAL AND MECHANICAL ENGINEERS are studying basic phenomena, developing processes, and fabricating and testing fiber processing.

MICROBIOLOGISTS are concerned with fermentations in the production of new and improved products from wheat and fundamental knowledge of the mechanisms that control sporulation and germination of spores.

PHARMACOLOGISTS are investigating the metabolic fate of chemical compounds and the mechanisms by which they affect man and animals.

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# RESEARCH CAREERS IN CHEMISTRY AND OTHER SCIENCES

U. S. DEPT. OF AGRICULTURE  
NATIONAL AGRICULTURAL SERVICE

JAN 7 1965

CURRENT SERIAL RECORDS

AGRICULTURAL RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE • Miscellaneous Publication No. 982



## ATTRACTIVE CAREER LADDER

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Grades	Salaries	Requirements:
GS-5	\$5,181 (chemists, physicists, and engineers \$6,207)	Bachelor's degree in an appropriate major.
GS-7	\$6,269 (chemists, physicists, and engineers \$7,304)	Bachelor's degree plus 1 year of appropriate graduate work or 1 year of research experience. Persons with a bachelor's degree may qualify for GS-7 if they have shown superior academic qualifications by their overall college average, by their average in their college major, by high class standing, or by election to national academic honor societies.
GS-9	\$7,479 (chemists, physicists, and engineers \$7,987)	Master's degree in appropriate field within the last 2 years and demonstrated superior ability in graduate studies; or bachelor's degree plus 2 years of appropriate graduate work (60 semester hours), or 2 years of progressive research experience.
GS-11	\$8,961 (chemists, physicists, and engineers \$9,267)	Ph. D. degree; or 3 years of progressively responsible research experience beyond the bachelor's degree level.



GS-12 \$10,619

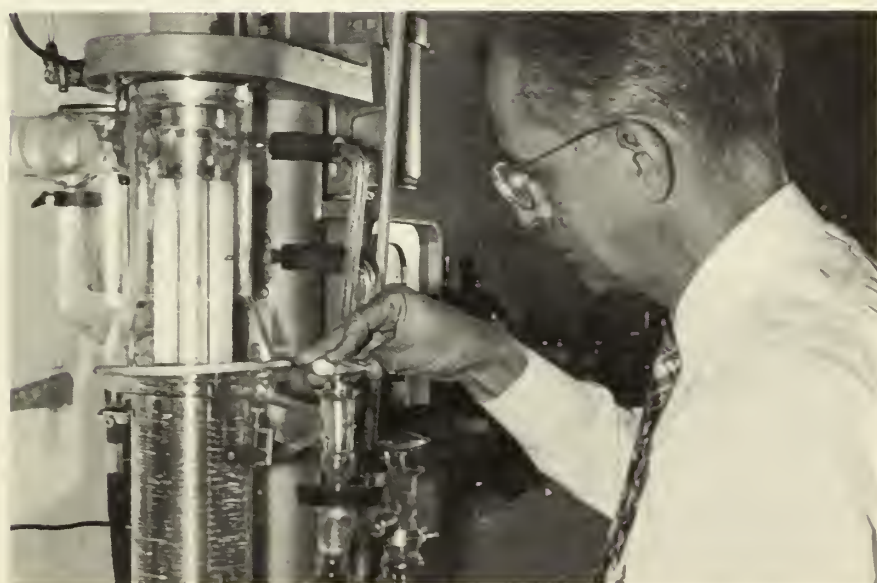
GS-13 \$12,510

GS-14 \$14,680

GS-15 \$17,055

Ph. D. degree within the last 2 years, and demonstrated superior ability in graduate studies; or 3 years of progressively responsible research experience beyond the bachelor's degree level.

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Individual specialization and recognition  
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Collaboration with outstanding scientists  
Scientific seminars and lecture series  
Prompt publication with authorship

## CAREER BENEFITS

Training opportunities  
Promotions based on achievement  
Regular salary increases  
Incentive and honor awards  
Liberal vacation and sick leave benefits  
Low-cost life and health insurance  
Excellent retirement system  
Moving and travel expenses (for most positions)

## CREATIVE SCIENTISTS SOUGHT

B.S.	IN	Organic chemistry, physical chemistry and biochemistry
M.S.		Physics
Ph. D.		Chemical and mechanical engineering
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Summer research assignments	FOR	Undergraduate trainee
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PLUS

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